

ditrimethylolethane or a tetrafunctional central group of the general formula I



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in which the indices and variables have the following definitions:

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$m + n + o + p = 4$; where

m is an integer from 1 to 3, and

n, o and p are 0 or an integer from 1 to 3;

q, r, s and t are an integer from 1 to 5, where $q \geq r, s, t$, especially $q > r, s, t$;

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X is -O-, -S- or -NH-;

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A is -CR₂-; where

R is -H, -F, -Cl, -Br, -CN, -NO₂,

C₁-C₃ alkyl or haloalkyl or C₁-C₃

alkoxy radical or, if q, r, s

and/or t are at least 2, R is a

C₂-C₄ alkanediyl and/or

oxaalkanediyl radical having 2

to 5 carbon atoms and/or an

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oxygen atom -O- which bridges

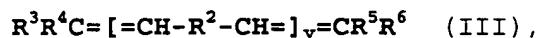
from 3 to 5 carbon atoms of the

radical -A-;

(ii) cyclic and/or acyclic C₉-C₁₆ alkanes

functionalized with at least two hydroxyl groups or at least one hydroxyl group and at least one thiol group;

5 (iii) polyols obtainable by hydroformylating oligomers of the formula III,

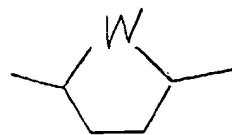


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in which R^2 is $-(-CH_2-)_w-$,

in which the index w is an integer from 1 to 6, or

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in which W is $-CH_2-$ or an oxygen atom;

R^3 , R^4 , R^5 and R^6 independently of one another are hydrogen atoms or alkyl; and

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the index v is an integer from 1 to 15.

5. A liquid composition or a homopolymer or copolymer as claimed in claim 4, wherein

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- the polyols (I) used comprise a hyperbranched compound obtainable by reacting 2,2-

bishydroxymethylbutane-1,4-diol with phthalic anhydride and then reacting the resultant intermediate with glycidyl esters of tertiary, highly branched, saturated monocarboxylic acids,

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- the polyols (ii) used comprise dialkyloctanediols, especially diethyl-octanediols, and

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- the polyols (iii) used comprise hydroformylated and hydrogenated oligomers, obtainable by metathesis from acyclic monoolefins and cyclic monoolefins, hydroformylation of the resultant

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oligomers and subsequent hydrogenation, the cyclic monoolefin used comprising cyclopentene and the acyclic monoolefins used comprising hydrocarbon mixtures obtained in petroleum processing by cracking (C₅ cut), and the

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polyols (iii) having a hydroxyl number (OHN) of from 200 to 650, in particular from 250 to 450, a number-average molecular weight M_n of from

400 to 1 000, in particular from 400 to 600, a mass-average molecular weight M_w in the range

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from 600 to 2 000, in particular from 600 to 1 100, and a polydispersity M_n/M_w from 1.4 to 3,

in particular from 1.7 to 1.9.

6. A liquid composition or a homopolymer or copolymer

as claimed in claim 3, wherein the reactive diluents containing epoxide groups comprise

(iv) glycidyl ethers of polyols or polyphenols
5 such as glycerol, diglycerol, glucitol, erythritol, pentaerythritol, dipentaerythritol, trimethylolpropane, trimethylolethane, ditrimethylolpropane, ditrimethylolethane, tetrakis(2-hydroxyethyl)ethane, tetrakis(3-
10 hydroxypropyl)methane, the tetraols III to III10:

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HO-(-CH₂-)₂-C(-CH₂-OH)₃,
(III1)

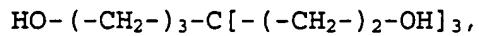
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HO-(-CH₂-)₃-C(-CH₂-OH)₃,
(III2)

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HO-(-CH₂-)₄-C(-CH₂-OH)₃,
(III3)

HO-(-CH₂-)₅-C(-CH₂-OH)₃,
(III4)

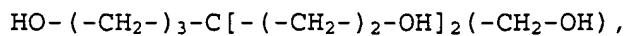
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[HO-(-CH₂-)₂-]₂C(CH₂-OH)₂,
(III5)

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[HO-(-CH₂-)₂-]₃C-CH₂-OH,
(III6)



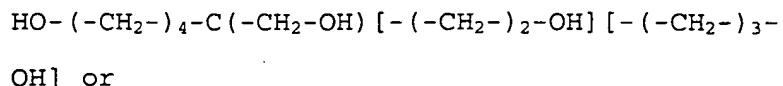
(II7)

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(II8)

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(II9)

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the polyols (i), (ii) and (iii),
pyrocatechol, resorcinol, hydroquinone,
pyrogallol, phloroglucinol, (p-hydroxy-
phenyl)phloroglucinol, 5-(7-hydroxynaphth-1-
yl)pyrogallol, bisphenol F, bisphenol A or
novolaks;

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(v) low molecular mass epoxy resins or oligomers
which contain glycidyl-containing monomers
(A6) in copolymerized form;

(vi) glycidyl esters of Versatic® acid;

(vii) epoxy resin esters of saturated and
unsaturated fatty acids (epoxidized oils);

and/or

(viii) epoxidized triglycerides of natural oils
and esters.

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7. A liquid composition as claimed in any of claims 1 or 3 to 6 or a homopolymer or copolymer as claimed in any of claims 2 to 6, preparable by homopolymerization or copolymerization of olefinically unsaturated monomers in a Taylor reactor having an external reactor wall located within which there is a concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular reactor volume, at least one means for metered addition of reactants, and a means for the discharge of product, where the reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor vortex flow are met over substantially the entire reactor length in the reactor volume, i.e. in such a way that the annular gap broadens in the direction of flow traversal.

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25 8. A process for preparing a liquid composition or a homopolymer or copolymer of olefinically unsaturated compounds by free-radical (co)polymerization in a liquid reaction medium, which comprises using reactive diluents for

thermally curable multisubstance mixtures as the reaction medium.

9. The process as claimed in claim 8, wherein a fraction of the reactive diluents is modified after the (co)polymerization with olefinically unsaturated compounds, especially with monomers (A2), (A5) and/or (A6), so that the resulting liquid composition is curable both thermally and by actinic light and/or electron beams.
10. The process as claimed in claim 8 or 9, conducted in a Taylor reactor having an external reactor wall located within which there is a concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular reactor volume, at least one means for metered addition of reactants, and a means for the discharge of product, where the reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor vortex flow are met over substantially the entire reactor length in the reactor volume, i.e. in such a way that the annular gap broadens in the direction of flow traversal.
11. The use of a liquid composition as claimed in any of claims 1 and 3 to 7, of a homopolymer or

copolymer as claimed in any of claims 2 to 7 or of
a liquid composition or homopolymer or copolymer
prepared as claimed in any of claims 8 to 10 to
5 prepare coating compositions, adhesives or sealing
compounds curable thermally or curable thermally
and with actinic light and/or electron beams.